

Application No.: 10/516,921
Inventor: Dietzen
Docket No.: 53647

Amendments to the Claims:

The following Listing of Claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (currently amended) A process for the preparation of expandable styrene polymers having a molecular weight M_w of from 190,000 to 400,000 ~~greater than 170,000~~ g/mol, which comprises conveying a blowing agent-containing styrene polymer melt having a temperature in the range from 140 to 300°C through a die plate with holes whose diameter at the die exit is at most 1.5 mm and wherein the die plate is heated at least to the temperature of the blowing agent-containing polymer melt, and subsequently granulating the extrudate.

2. (currently amended) A process as claimed in claim 1, wherein the expandable styrene polymer has a molecular weight in the range from 220,000 to 300,000 ~~190,000 to 400,000~~ g/mol.

3. (previously presented) A process as claimed in claim 1, wherein the expandable styrene polymer has a molecular weight distribution having a polydispersity M_w/M_n of at most 3.5.

4. (previously presented) A process as claimed in claim 1, wherein the styrene polymer employed is transparent polystyrene (GPPS), high-impact polystyrene (HIPS), an acrylonitrile-butadiene-styrene polymer (ABS), styrene-acrylonitrile (SAN) or a mixture thereof or with polyphenylene ether (PPE).

5. (previously presented) A process as claimed in claim 1, wherein the blowing agent-containing styrene polymer melt comprises, in homogeneous distribution, from 2 to 10% by weight of one or more blowing agents selected from the group consisting of aliphatic hydrocarbons having from 2 to 7 carbon atoms, alcohols, ketones, ethers or halogenated hydrocarbons.

6. (currently amended) A process as claimed in claim 1, wherein the blowing agent-containing styrene polymer melt comprises plasticizers selected from the group consisting of: ; ~~such as~~ mineral oils, oligomeric styrene polymers and phthalates, in proportions in the range from 0.05 to 10% by weight, based on the styrene polymer.

7. (previously presented) A process as claimed in claim 1, wherein the blowing agent-containing styrene polymer melt is conveyed through the die plate at a temperature in the range from 160 to 240°C.

8. (currently amended) A process as claimed in claim 1, wherein the die plate is heated at ~~least to the~~ to a temperature in the range of from 20 to 100°C above the temperature of the blowing agent-containing polystyrene melt.

9. (previously presented) A process as claimed in claim 1, wherein the diameter (D) of the die holes at the die exit is in the range from 0.2 to 1.2 mm.

10. (previously presented) A process as claimed in claim 1, wherein the die plate has holes having an L/D ratio (length (L) of the die zone, whose diameter corresponds at most to the diameter at the die exit, to the diameter (D) at the die exit) of at least 2.

11. (previously presented) A process as claimed in claim 1, wherein the diameter (E) of the holes at the die entrance of the die plate is at least twice as great as the diameter (D) at the die exit.

12. (previously presented) A process as claimed in claim 1, wherein the die plate has holes having a conical inlet with an inlet angle α of less than 180°.

13. (previously presented) A process as claimed in claim 1, wherein the die plate has holes

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having a conical outlet with an outlet angle b of less than 90° .

14. (previously presented) A process as claimed in claim 1, wherein the die plate has holes having different exit diameters (D).

15. (previously presented) A process as claimed in claim 1, wherein the blowing agent-containing styrene polymer melt comprises 0.05 to 1.5% by weight of water, based on the styrene polymer.

16. (currently amended) The A process as claimed in claim 1 ~~for the preparation of expandable styrene polymers having a molecular weight Mw of greater than 170,000 g/mol,~~ comprising the following steps:

- a) polymerization of styrene monomer or styrene monomer and ~~, if desired,~~ copolymerizable monomers,
- b) degassing of the resultant styrene polymer melt,
- c) mixing of the blowing agent and, if desired, additives into the styrene polymer melt by means of static or dynamic mixers at a temperature of at least 150°C ,
- d) cooling of the blowing agent-containing styrene polymer melt to a temperature of at least 120°C ,
- e) discharge through a die plate having holes whose diameter at the die exit is at most 1.5 mm, and
- f) granulation of the blowing agent-containing melt.

17. (currently amended) A process as claimed in claim 16 ~~claim 15~~, wherein step f) is carried out directly behind the die plate under water at a pressure in the range from 1 to 10 bar.

18. – 19. (canceled)

20. (currently amended) An expandable styrene polymer (EPS) obtained by the process as

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claimed in claim 16 ~~claim 19~~, wherein at least 90% of the internal water is present in the form of internal water droplets having a diameter in the range from 0.5 to 15 μm .

21. (currently amended) An expandable styrene polymer (EPS) obtained by the process as claimed in claim 16 ~~claim 19~~, whose expansion capability α is at most 125.

22. (currently amended) An expandable styrene polymer (EPS) as claimed in claim 20 ~~claim 18~~, which takes the form of granules having a diameter of from 0.4 to 1.8 mm.

23. (original) An expandable granulated styrene polymer (EPS) as claimed in claim 22, which has a bulk density of at most 700 g/l.

24. (currently amended) An expandable styrene polymer (EPS) as claimed in claim 20 ~~claim 18~~, which comprises from 0.01 to 30% by weight of pigments.